Three Silos

There are three grain silos of different sizes: 8,000 bushels, 5,000 bushels, and 3,000 bushels. The 8,000 bushel silo is full, the other two are empty. By pumping grain between these silos (and with no other means of measurement), how can you wind up with 4,000 bushels of grain in each of the two bigger silos?

Solutions to Three Silos

With no means of measurement, the movement of grain between silos must be one of just two operations: Either 1) Fill the target silo or 2) Empty the source silo.

There are two solutions to this problem, as shown below. The silos are labelled "S8" for the 8,000 bushel silo, "S5" for the 5,000 bushel silo, and "S3" for the 3,000 bushel silo.

Solution 1

	S8	S5	S3
Starting point	8,000	0	0
1. Fill S3 from S8	5,000	0	3,000
2. Empty S3 into S5	5,000	3,000	0
3. Fill S3 from S8	2,000	3,000	3,000
4. Fill S5 from S3	2,000	5,000	1,000
5. Empty S5 into S8	7,000	0	1,000
6. Empty S3 into S5	7,000	1,000	0
7. Fill S3 from S8	4,000	1,000	3,000
8. Empty S3 into S5	4,000	4,000	0

Solution 2

	S8	S5	S3
Starting point	8,000	0	0
1. Fill S5 from S8	3,000	5,000	0
2. Fill S3 from S5	3,000	2,000	3,000
3. Empty S3 into S8	6,000	2,000	0
4. Empty S5 into S3	6,000	0	2,000
5. Fill S5 from S8	1,000	5,000	2,000
6. Fill S3 from S5	1,000	4,000	3,000
7. Empty S3 into S8	4,000	4,000	0

Solution 2 has a slight advantage over Solution 1 in that it takes 1 fewer step and requires the movement of slightly less grain (22,000 bushels vs. 23,000 bushels).